

# KENWOOD

CASSETTE TUNER EQUALIZER

## KRC-999 II

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### INSTRUCTION MANUAL

**Take the time to read through this instruction manual. Familiarity with installation and operation procedures will help you obtain the best performance from your new cassette tuner equalizer.**

#### **For your records**

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your KENWOOD dealer for information or service on this product.

Model KRC-999II    Serial number \_\_\_\_\_

When asking the service to KENWOOD dealer, be sure to send both the main unit and the control unit.

# Controls and indicators

## Reset button

When the installation and all the wirings are finished, press this button.

Not usually used. However, when the microprocessor (micro-computer) malfunctions, press this button using a sharp-pointed object (such as a pencil).

When this button is pressed, the unit is reset to its initial state. Therefore, all the memories and clock are erased and need to be adjusted.

## Cassette tape slot

Insert the cassette tape into this slot with the cassette shell opening at the right until it reaches to the end of the slot. In this condition, tape will be automatically loaded when the Play/Program switch is pressed (this switch cannot be pressed when tuner is activated) or push the cassette further to engage manual loading.

## Volume indicator

Indicates the present volume level. As the volume level increases, more indicator segments light, and in the same way, as volume level decreases, more indicator segments go off.

## [TAPE]: Fast Forward/Rewind switch

Each switch permits Fast Forward or Rewind operation. To release the operation, press the Play/Program switch.

## [TUNER]: Tuning Up/Down switch

Press the Up switch to shift to a higher frequency. Press the Down switch to shift to a lower frequency. A single pressing of the switch allows the frequency to vary one step at a time. When the switch is kept pressed the frequency changes continuously.

When the knob is moved once, the frequency is changed by 200 kHz in FM mode and 10 kHz in AM mode.

## [EQ]: Equalizer level Up/Down switch

Press the Up switch to increase the equalizer level and the Down switch to decrease it. The equalizer level changes by one step when the switch is tapped once, and changes continuously when it is kept pressed.

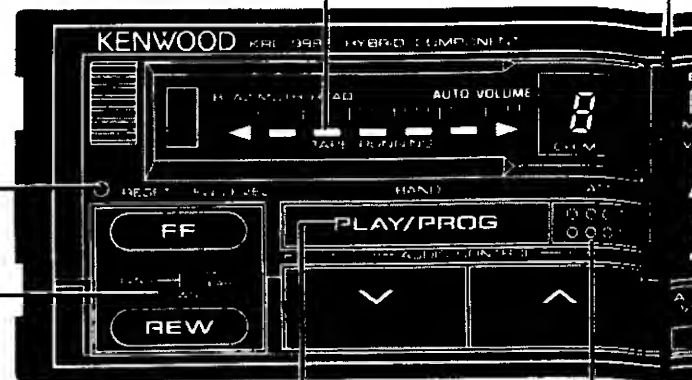
## [TAPE]: Play/Program switch

If this switch is pressed during playback, the tape direction is reversed. If this switch is pressed during Fast Forward or Rewind mode, the Fast Forward or Rewind mode is released and the unit enters Play mode.

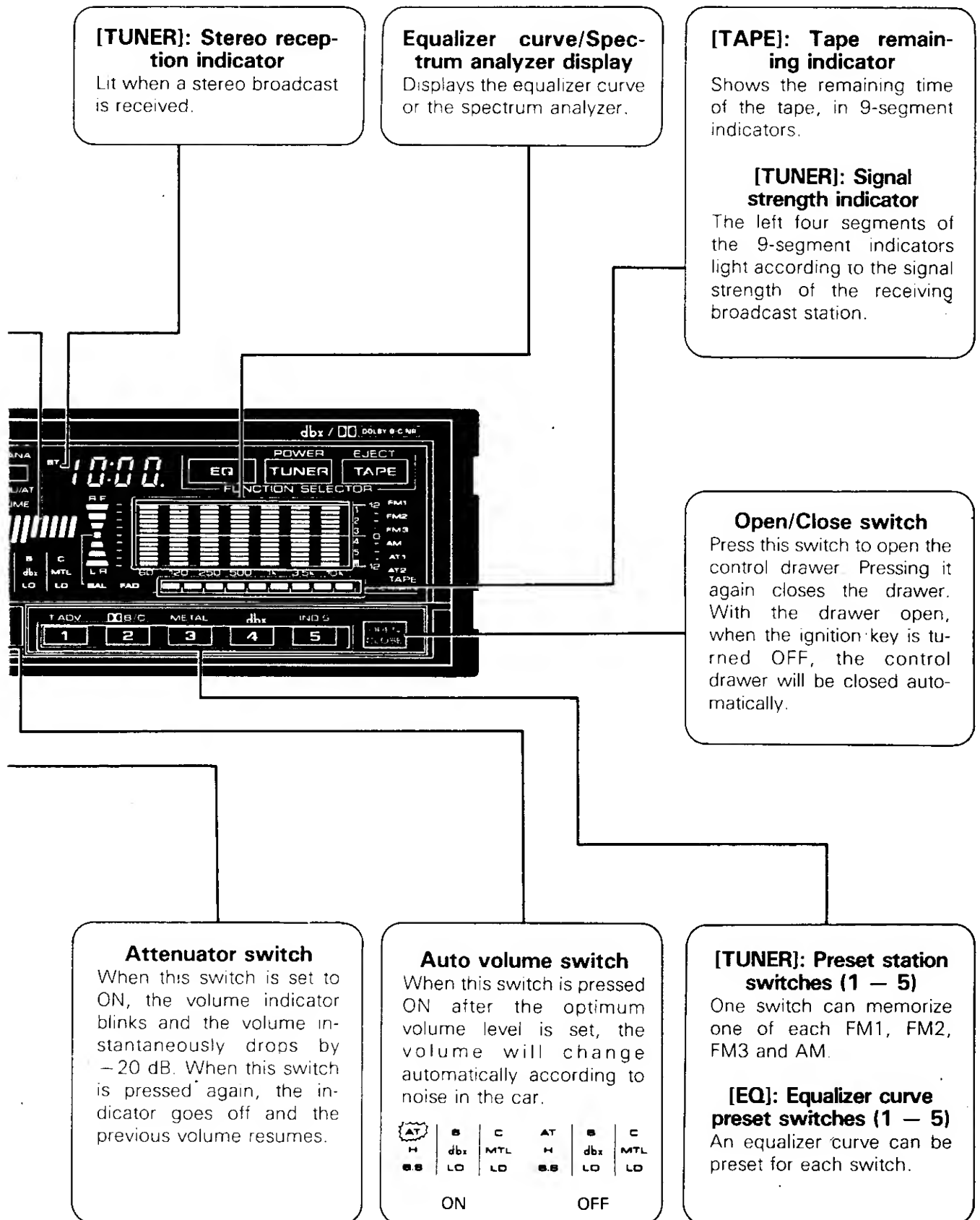
## [TUNER]: Band selector/Indicators

Selects reception band. Indicates the current receiving band.

→ FM1 → FM2 → FM3 → AM →



[TAPE]: Operation and indication when the Tape switch is ON.  
 [TUNER]: Operation and indication when the Tuner switch is ON.  
 [EQ]: Operation and indication when the Equalizer switch is ON.



# Controls and indicators

## [TUNER]: Manual/Auto switch

This switch is used to select the tuning mode; Auto 1 (seek), Auto 2 (preset seek) or Manual.



## [EQ]: Equalizer/Analyzer select switch

This switch is used to select the display mode; graphic equalizer curve display or spectrum analyzer display.

## [TAPE]: Clock display

Displays the present time in the 12 hour system.

## [TUNER]: Frequency/Clock display

Displays the frequency being received. The present time can also be displayed.

## [TAPE]: Tape running direction indicator

Shows the running status of the tape.

## Audio control $\wedge$ (Up)/ $\vee$ (Down) switches

Press the Up switch to increase the volume and the Down switch to decrease it. The volume changes by one step when the control switch is tapped once. It changes continuously, but slowly when it is kept lightly pressed, and continuously, but quickly when the switch is kept firmly pressed.

## [TAPE]: Music search indicator

Indicates the number of tunes to be skipped when the tape is quickly advanced.

## [TUNER]: Preset station channel indicator

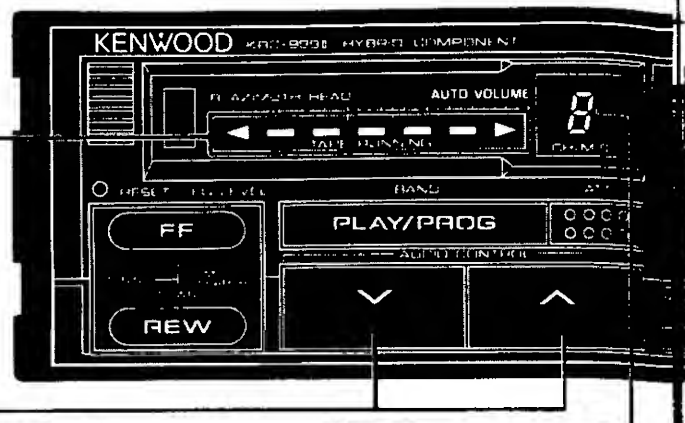
Indicates the channel number of the preset station being received.

## Balance/Fader indicator

Indicates the results Balance control adjustment, and that of the Fader control adjustment.

## [TAPE]: Tape advance switch

When this switch is pressed ON, up to 9 tunes after, or 8 tunes before, the current tune can be skipped with the music search operation. To search for a tune ahead of the current position, press the fast-forward switch, and to search for a tune before the current position, press the rewind switch. Press the switch the number of times corresponding to the number of tunes to be skipped.



### Equalizer switch

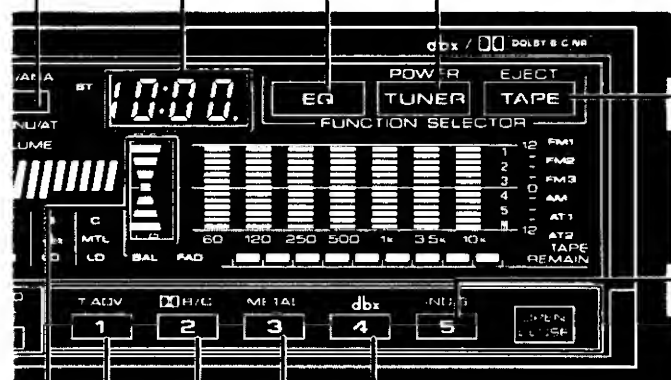
Press this switch when adjusting the graphic equalizer or other equalizer-related operation. This switch can be activated when the Tape or Tuner switch is ON.

### Tuner switch

This switch is used to turn the tuner ON and OFF. When the Equalizer or Tape switch is ON, pressing this switch enables control of the operations related to the tuner.

### Tape/Eject switch

This switch is ON, and the indicator lights, when tape play is engaged. When the Equalizer or Tuner switch is ON, pressing this switch enables control of the operations related to tape play. During tape play, when this switch is pressed, a loaded tape will be ejected.



### Index Scan switch

When this switch is pressed, the tape is fast-forwarded and the beginning of each tune (approx. 10 seconds) is played back from the next tune one after another. This operation is continued even when the tape running direction is reversed at the end of the current side. When the desired tune is heard, press this switch again or press Play/Program switch to release this operation.

### Dolby NR switches

Set this switch to ON when playing back a tape recorded with Dolby NR system

Dolby B ON	AT		C
	H	dbx	MTL
	SS	LO	LO
Dolby C ON	AT		C
	H	dbx	MTL
	SS	LO	LO
Dolby system OFF	AT		C
	H	dbx	MTL
	SS	LO	LO

### Metal switch (Tape selector)

Position for Metal, Chrome or High Bias tapes (CrO<sub>2</sub>) (70  $\mu$ S EQ)

AT		C
H	dbx	MTL
SS	LO	LO

Position for Normal tapes (120  $\mu$ S EQ)

AT		C
H	dbx	MTL
SS	LO	LO

### dbx switch

Set this switch to ON when playing back a tape recorded with dbx system.

AT		C	AT		C
H	dbx	MTL	H	dbx	MTL
SS	LO	LO	SS	LO	LO

dbx ON

dbx OFF

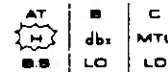
# Controls and indicators (Control drawer section)

## [EQ]: Equalizer band select switches

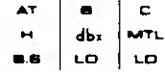
These switches are used to select the equalizer band to be adjusted. Press "<" to move the adjustable band (the blinking indicator) to the left and press ">" to move it to the right.

## High/Low select switch

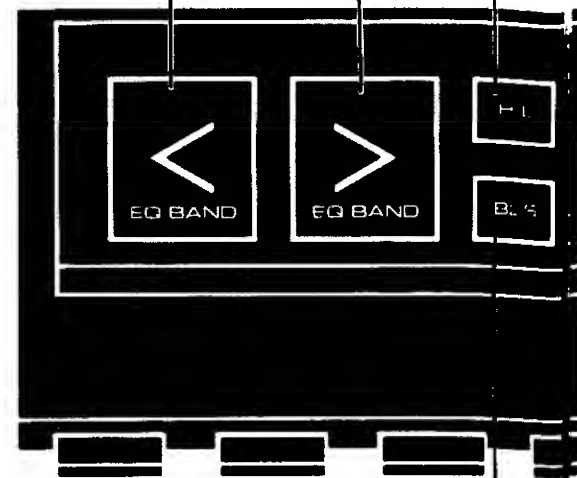
This switch is used to select the operating sensitivity, between High and Low, for the Auto Volume function.



High



Low



## Blank skip switch

With this switch ON, when a non-recorded blank section continues for more than about 10 seconds, the tape is automatically fast-forwarded to the beginning of the next tune.

## [TUNER]: Local switch

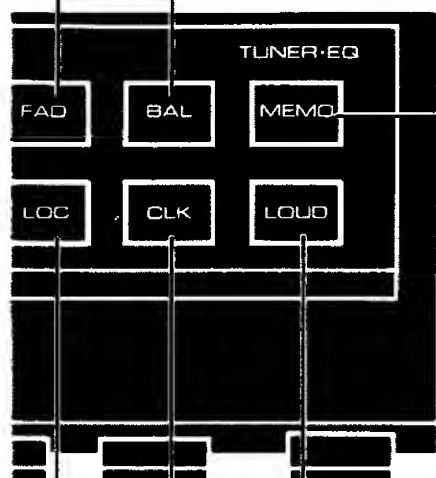
When this switch is set ON, interference, distortion, and noise in a strong signal area will be effectively reduced.

### Fader switch

When this switch is set to ON, the indicator illuminates and fader adjustment can be performed with the Audio Control Up/Down switches. Pressing the Up switch increases the volume level of the rear speakers, and pressing the Down switch increases the volume level of the front speakers.

### Balance switch

When this switch is set to ON, the indicator illuminates and balance adjustment can be performed with the Audio Control Up/Down switches. Pressing the Up switch increases the volume level of the right speakers, and pressing the Down switch increases the volume level of the left speakers.



### [TUNER]: Memory switch

Used to program a desired station into the memory presets. When this switch is pressed, an "8" display blinks in the preset channel indicator for 5 seconds. During this 5-second period, press the selected switch to store the current listening station.

### [EQ]: Memory switch

Used to store the adjusted equalizer curve into memory. When this switch is pressed, an "M" indicator blinks for 5 seconds. During this 5-second period, press the selected switch to store the current equalizer curve.

### Clock switch

When this switch is pressed during Tuner mode, the frequency display is changed to clock display. Pressing it again returns to the frequency display. Even though in the Clock mode, when tuning is performed, the display shows the frequency, and about 5 seconds later the clock display resumes.

### Loudness switch

When listening at a low volume, press this switch. The loudness circuit will compensate for the human ear's decreased response.

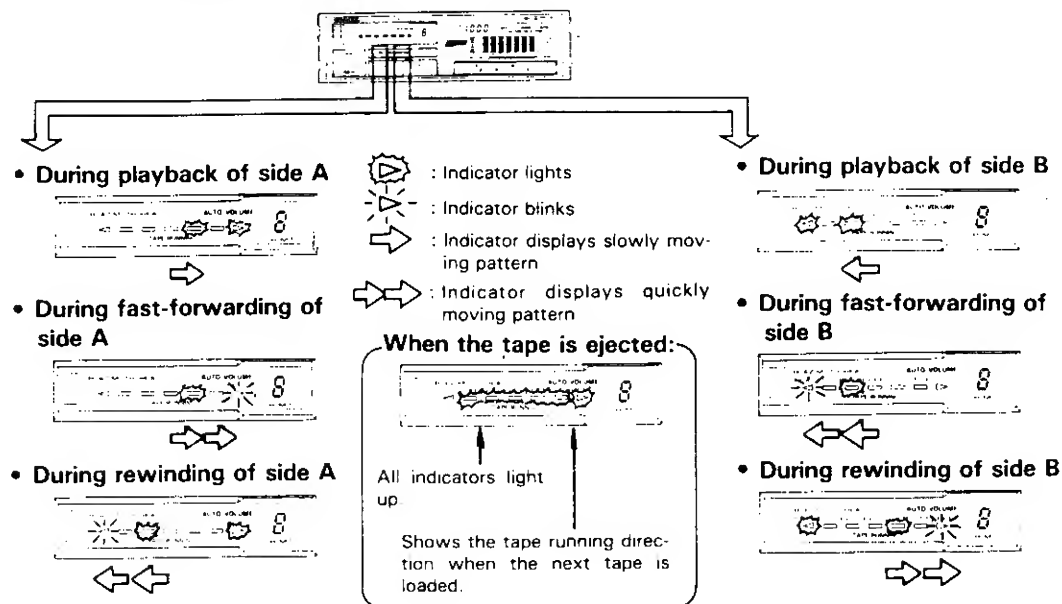
# Operation

## ■ Tape playback

1. Turn the power on.
2. When a cassette is inserted with the cassette shell opening at the right, playback starts.
3. Select the NR system and tape position according to the tape to be used.
4. When the program switch is pressed, playback of the reverse side of the tape starts.
5. To stop playback, press the Eject switch.

## ■ How to check the Tape running direction indicator

- When a tape is loaded with Side A facing upward, the tape running indicator shows as follows:



## ■ Auto volume

1. Adjust the volume to an optimum level when noise is low, such as when the car is stopped.
2. In this condition, press the Auto volume switch to ON. The volume level will change automatically according to noise in the car.
3. On a road where noise is high, such as on a highway, set the High/Low select switch to High. On a normal road, set it to Low.

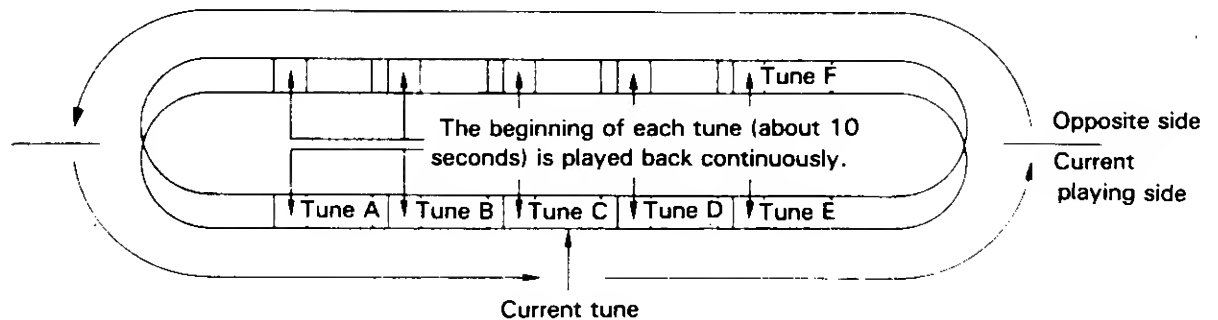
## ■ Tape advance (T.ADV)

- Up to 9 tunes after the current tune, or up to 8 tunes before the current tune, can be skipped to search for a desired tune, by detecting the blank section between tunes.
1. Press the Tape Advance switch. The Music Search indicator shows "1".
  2. To search for a tune in advance of the current one, press the fast-forward switch the number of times corresponding to the tunes to be skipped (up to 9 tunes, while the music search indicator shows only "8"). To search for a tune behind the current one, press the rewind switch the number of times corresponding to the tunes to be skipped (up to 8 tunes, while the music search indicator shows "8").
  3. It should be noted that the T. ADV function may not work correctly in the following cases:
    - Tapes where the unrecorded space between selections is less than 5 seconds.
    - Tapes where selections include passages with low recording levels lasting longer than 5 seconds.



## ■ Index Scan

The beginning of each tune can be detected, and played back for about 10 seconds continuously so that the desired tune is detected easily and speedily.



- When index scan switch is pressed, the tape is fast-forwarded and the beginning of each tune (approx. 10 seconds) is played back from the next tune one after another. This operation is continued even when the tape running direction is reversed at the end of the current side. When the desired tune is heard, press this switch again play/program switch to release this operation.

### **Note:**

If the blank section between selections is too long, this function does not operate correctly.

## ■ Key-Off Eject

When the ignition key or power switch is turned off with the tape loaded, the tape will be automatically ejected about 3 seconds after to prevent damaging the tape or cassette mechanisms.

## ■ The KRC-999II incorporates Dolby NR B/C types and the dbx NR system.

### **Dolby B type NR system**

In general, Dolby NR refers to the B type noise reduction system. By encoding and decoding the higher frequency components of a small signal, the noise level can be reduced by a maximum of 10 dB.

### **Dolby C type NR system**

The dynamic range is expanded by 10 dB compared with the B type noise reduction system. The anti-saturation circuit encodes and decodes higher level signals by a maximum of 3 dB to reduce distortion when the input signal level is high.

### **dbx NR system**

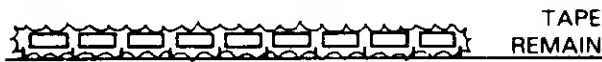
Higher level signals are reduced in level below the saturation level of the tape before being recorded, while lower level signals are boosted in level above the tape hiss noise level before being recorded. When these recorded signals are reproduced, higher level signals are played back without distortion and lower level signals are reproduced without being masked by hiss noise.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

dbx is a registered trademark of dbx, Inc.

## ■ Tape remaining indicator

When C-30 (15 minutes on both sides) to C-90 (45 minutes on both sides) are used, the remaining tape volume (approximate remaining time) can be displayed using the 9-segment tape indicator by dividing into eight as follows:



- All 9 LEDs are lit immediately after the current side playback has begun.



- This example shows that the remaining amount of tape is less than 1/9.



- When fast-forwarding or rewinding, LEDs are blinking while counting the remaining tape.

## ■ Auto tuning 1 (Seek)

1. Turn the power ON.
2. Select the required band.
3. Set the Manual/Auto switch to Auto 1.
4. To receive only a strong signal, set the Local switch to ON.
5. When the Tuning switch is pressed, the unit starts seeking. When a marginal broadcast is received, the seek stops.

## ■ Auto tuning 2 (Preset Seek)

1. Turn the power ON.
2. Select the required band.
3. Set the Manual/Auto switch to Auto 2.
4. To receive only a strong signal, set the Local switch to ON.
5. Each time the Tuning switch is pressed, the preset stations will be received sequentially.

## ■ Manual tuning

1. Turn the power ON.
2. Select the required band.
3. Set the Manual/Auto switch to Manual.
4. Using the Tuning switch, tune in to the required station frequency. Tap the switch once to vary the frequency one step, and hold the switch into vary the frequency continuously.

## ■ Station memory

1. Turn the power ON.
2. Receive the desired station.
3. Press the Memory switch. An "B" indicator blinks in the preset channel indicator for about 5 seconds.
4. While the "B" is blinking, press the Preset station switch to store the received station frequency.

### ■ Auto memory

Five stations in the selected band can automatically be memorized.

1. Turn the power ON.
2. Select the desired band (FM1 to FM3 or AM).
3. Press the Memory switch. An " B " indicator blinks in the preset channel indicator for about 5 seconds.
4. While the " B " is blinking, press the Fast-Forward switch.
5. The selected band is automatically scanned and five stations are memorized. When 5 stations are memorized, the auto memory function is automatically released.

### ■ Equalizer curve display and Spectrum analyzer display

1. When the Tape or Tuner switch is ON, press the Equalizer switch.
2. Press the Equalizer/Analyzer switch to select the Equalizer curve display or the Spectrum analyzer display.
3. Press the Tape or Tuner switch again, whichever was previously selected, to resume normal status.

### ■ Adjusting the equalizer

1. When the Tape or Tuner switch is ON, press the Equalizer switch.
2. Press the Equalizer/Analyzer switch to display the equalizer curve.
3. Select the frequency band to be adjusted with the Equalizer band select switch. The adjustable band indicator blinks for about 5 seconds.
4. While the band indicator is blinking, adjust the Equalizer level Up/Down switch to get the required response.
5. Press the Tape or Tuner switch, whichever was previously selected, again to resume normal display status.

### ■ Equalizer curve memory

1. Adjust the response of each frequency band according to steps 1 through 4 in "Adjusting the equalizer".
2. Press the Memory switch. An "M" indicator blinks for about 5 seconds.
3. While the "M" indicator is blinking, press the Equalizer curve preset switch. The currently adjusted equalizer curve is stored in memory.

### ■ Adjusting the clock

1. Keep the Memory switch pressed.
  2. While pressing the Memory switch, set the minute digits with the Fast-Forward switch, and the hours digits with the Rewind switch.
- \* This operation should be performed when the display shows the time.

# Care and maintenance

- The power source of this unit is exclusively DC 12 V, negative ground. If you wish to mount the unit on a vehicle with DC 24 V, please consult your appointed KENWOOD dealer.
- Do not place the cassette tuner in a place where the cassette tuner may be exposed to direct sunlight, heat or moisture. Be careful that metal objects and water do not enter the set.
- If you have difficulty in installing the set in your car, please contact your KENWOOD dealer.

## Notes on handing tape

- Before loading a cassette, check the tape for slack. If there is slack tape, remove it using a pencil.
- Do not expose the cassette tape to direct sunlight. Leaving a cassette at high temperature or humidity can deform the cassette shell or tape.
- 120-minute tape is very thin. Avoid its use, because it can easily be twisted around the pinch roller.

## Head cleaning

Magnetic particles from the tape adhere to the head surface after a long period of use, resulting in noise and poor quality sound. Clean the head with cleaning tape available at your stereo shop. And follow the directions with the head cleaner.

# Connections

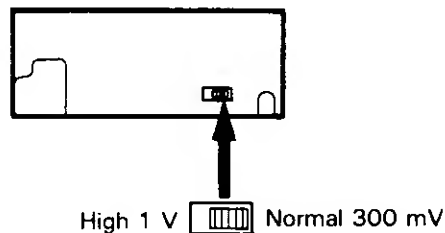
## ■ Install the KRC-999II in a following manner and wiring them

1. Before installation and wiring, remove the (–) terminal of the battery to prevent short-circuiting.
2. Connect the ground to the metal chassis of the car.
3. Connect the input and output cords of the system.
4. Connect the back-up power supply lead (yellow).
5. Connect the accessory power lead (red).
6. Install the set and after confirming the installation and wirings are correct, connect the (–) terminal of the battery.
7. After all installation and wiring are completed, be sure to press the Reset button.

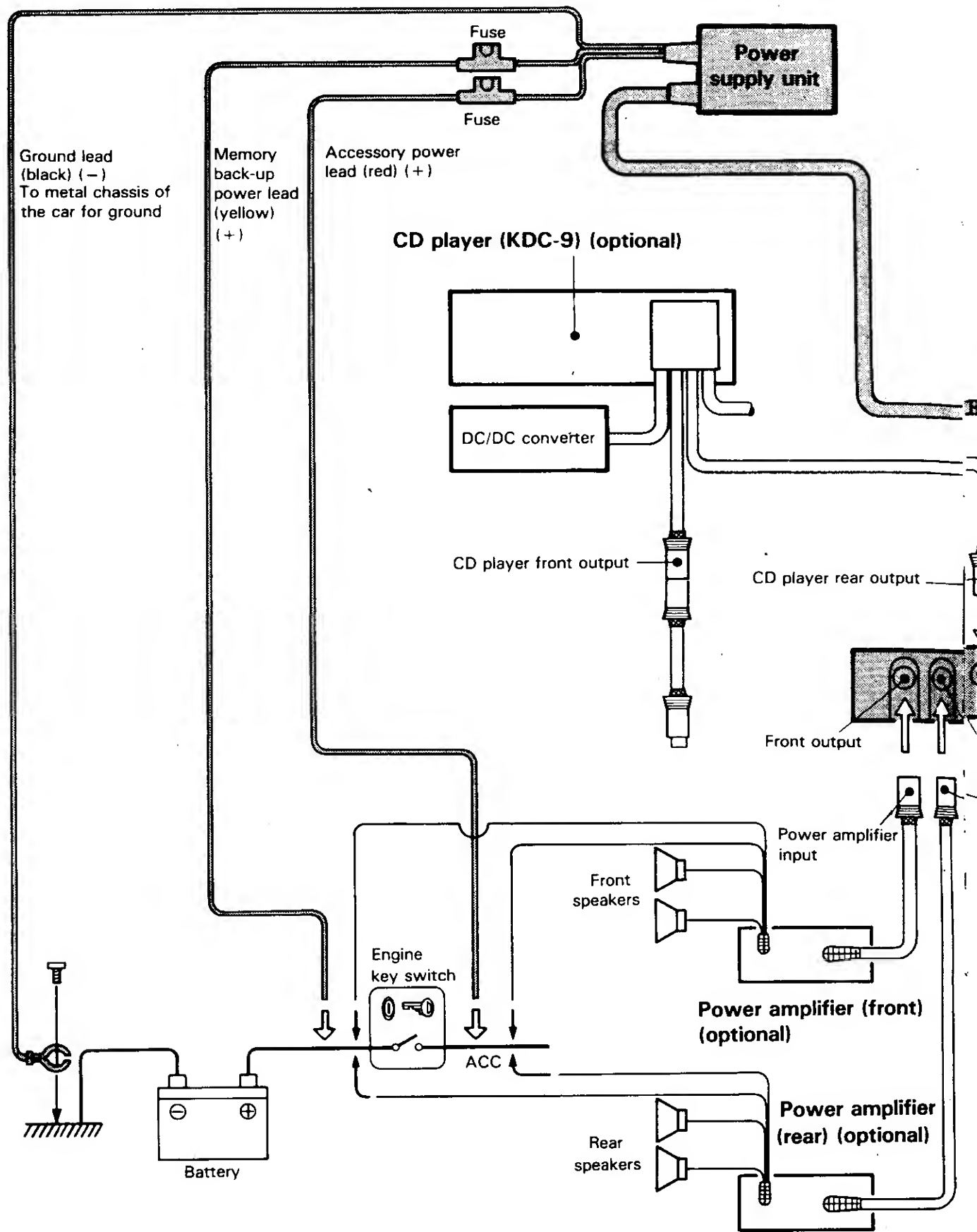
### Notes:

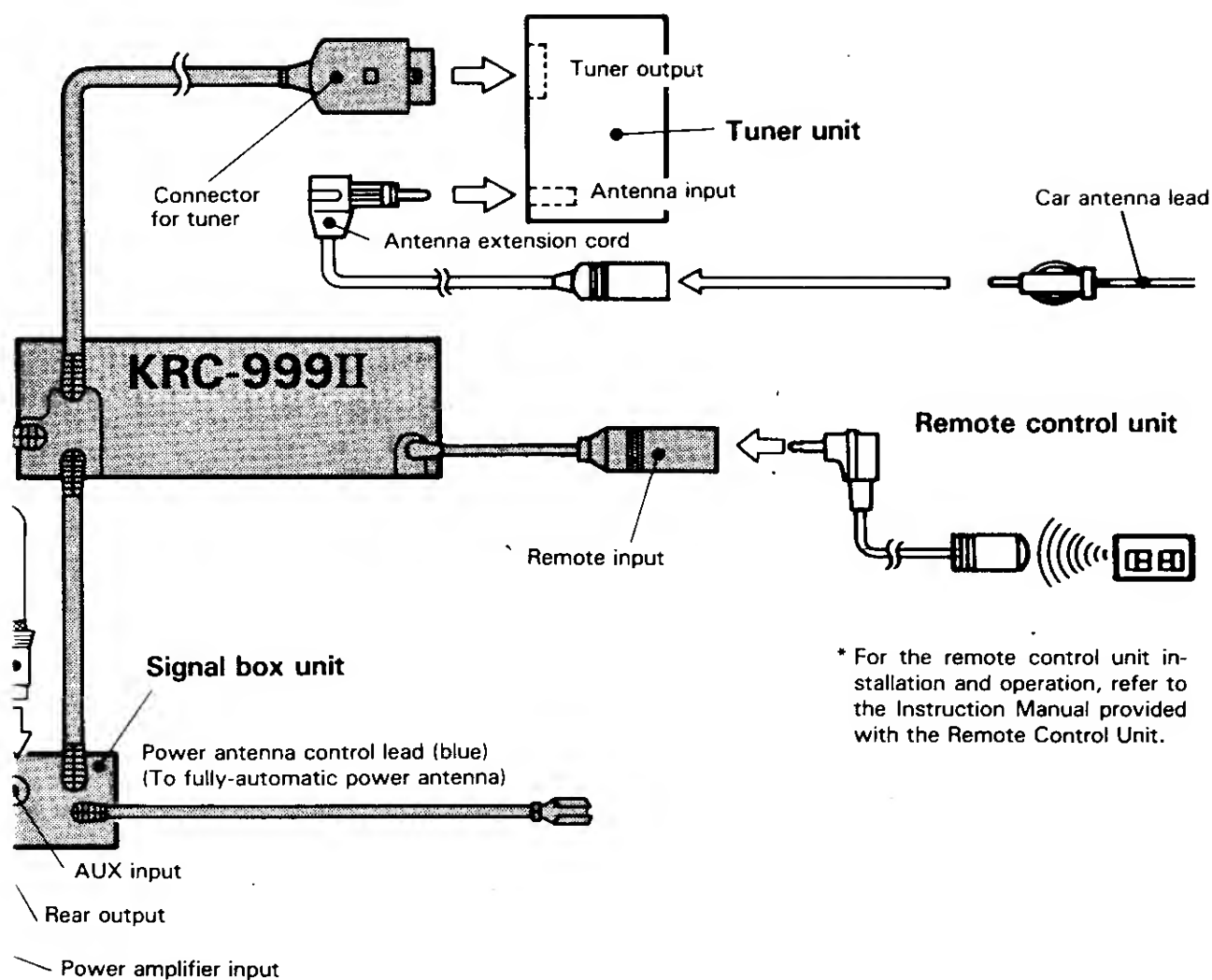
When the fuse is blown, replace with a new one having the designated current capacity after confirming that no cable is short-circuited.

## ■ Preamp output voltage selector (Rear panel)



# Connections



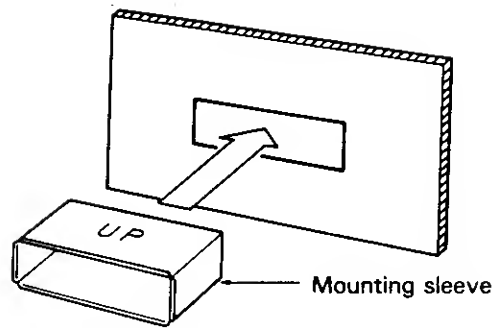


\* If the installation location of the power amplifier is distant from the signal box unit, use the optionally available extension cable, CA-18X (1 m) or CA-28X (2 m).

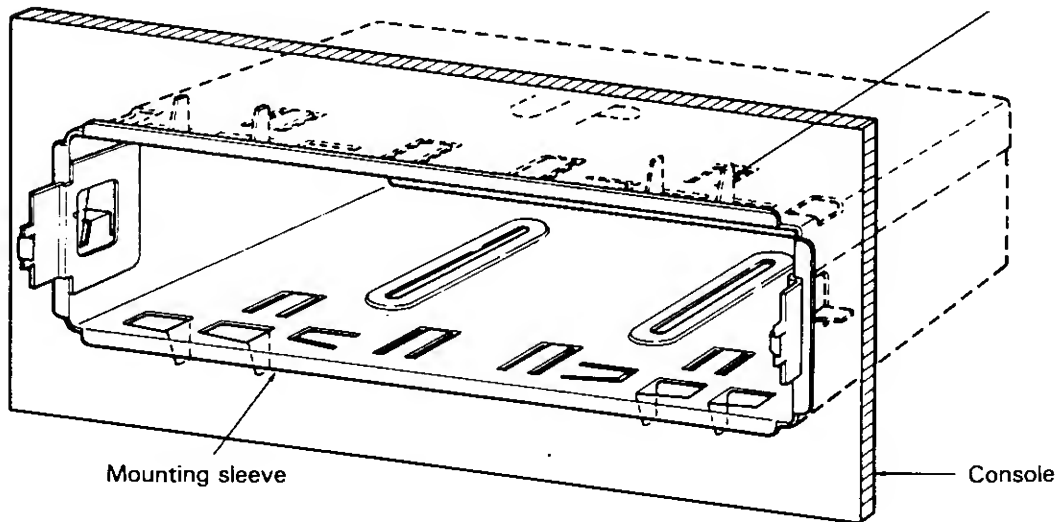
# Installation

## 1. Install the mounting sleeve.

- Install the sleeve to the chassis with lugs. Bend the lugs using a screwdriver.
- \* The lugs differ depending on the thickness of the dash panel.

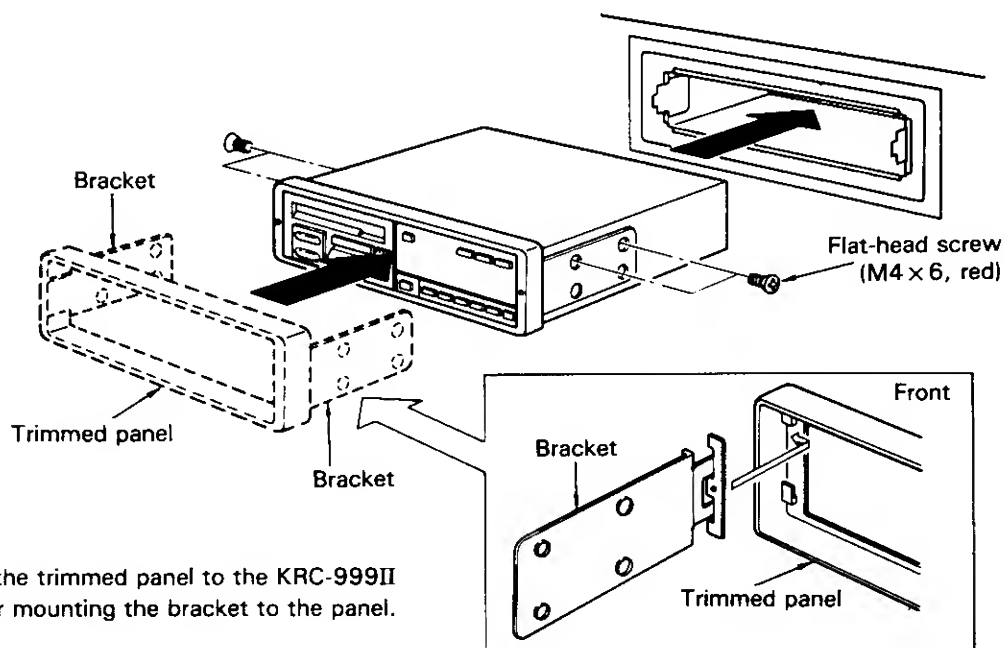


\* Insert the mounting sleeve with its letter "UP" upward.



## 2. Insert the KRC-999II into the sleeve.

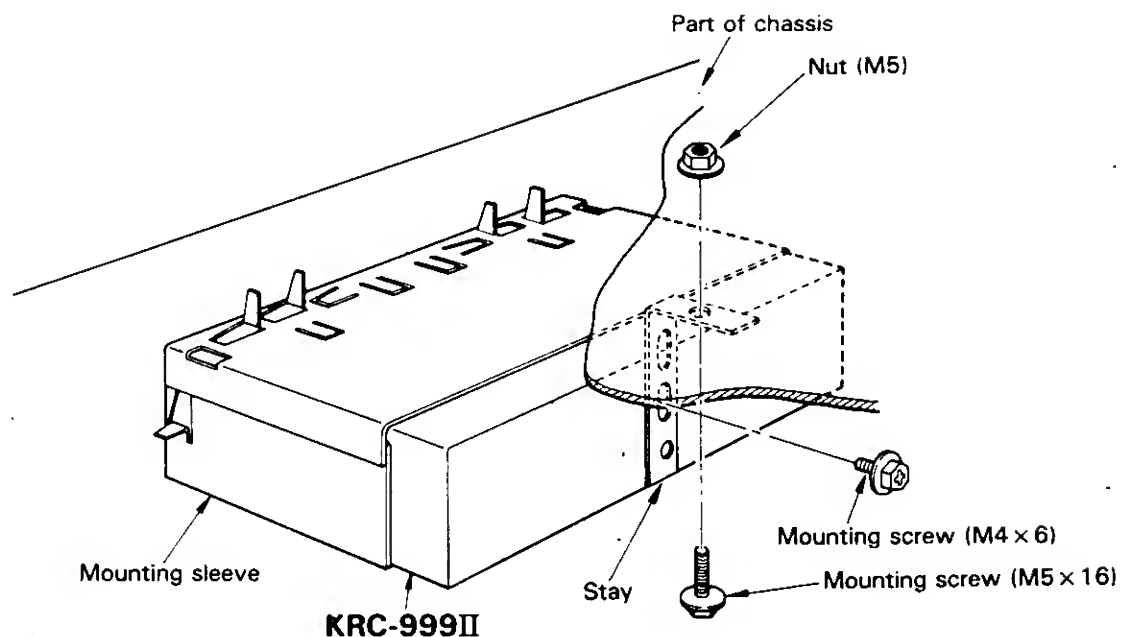
- Mount the panel with brackets to the unit as shown in the figure.
- \* Insert the unit into the sleeve, and it will be fixed with both sides.



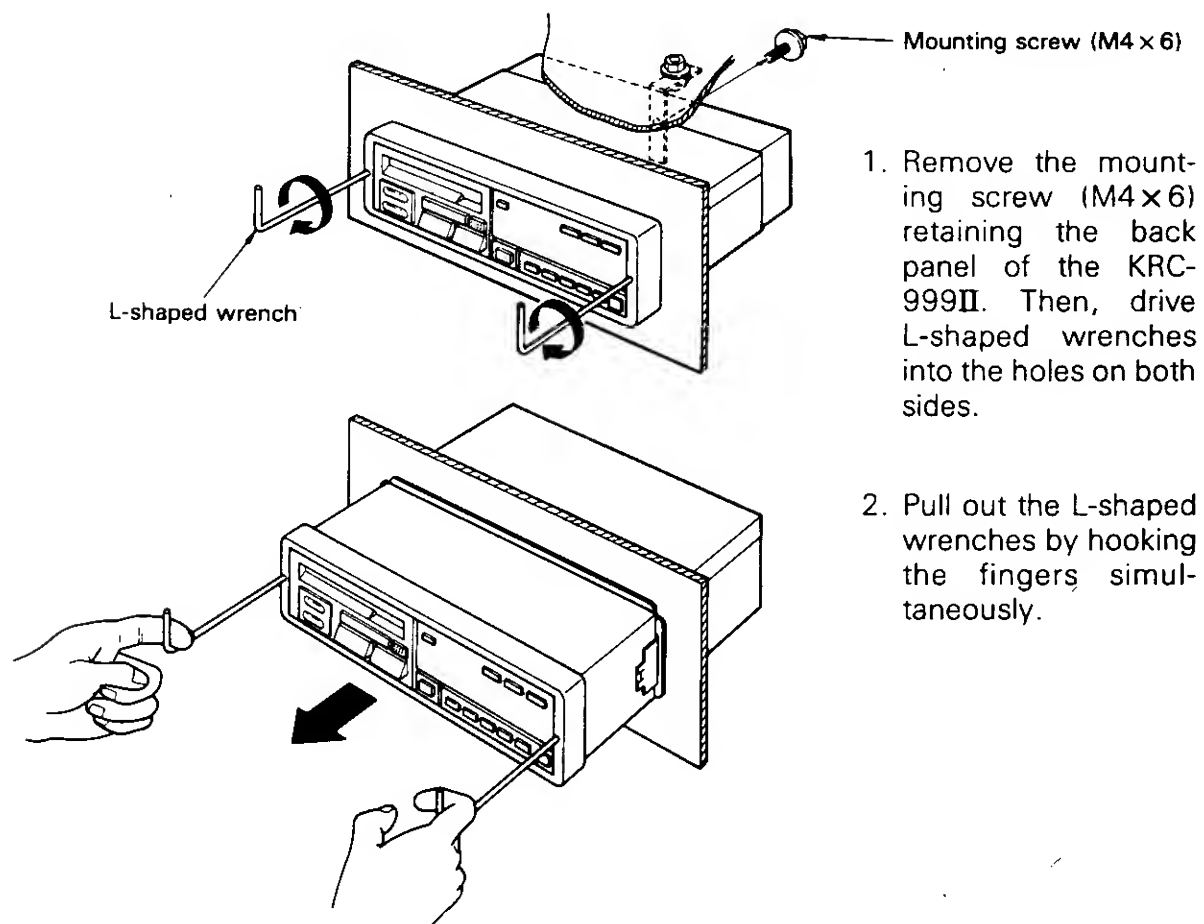
**Note:** Fix the trimmed panel to the KRC-999II after mounting the bracket to the panel.



### 3. Fix the KRC-999II with stays



### [How to remove the KRC-999II]



# Specifications

Specification subject to change without notice.

## FM Tuner Section

Frequency range .....	87.9 MHz-107.9 MHz
Channel Space .....	200 kHz
Usable Sensitivity .....	12.0 dBf (1.1 $\mu$ V/75 ohms)
50 dB Quieting Sensitivity .....	15.2 dBf (1.6 $\mu$ V/75 ohms)
Frequency Response ( $\pm 1$ dB) .....	30 Hz-15 kHz
Signal to Noise Ratio .....	75 dB
Alternate Channel Selectivity .....	80 dB
Capture Ratio .....	1.5 dB
Image Response Ratio .....	70 dB
IF Response Ratio .....	75 dB
Stereo Separation (1 kHz) .....	40 dB

## AM Tuner Section

Frequency Range .....	530-1620 kHz
Channel Space .....	10 kHz
Usable Sensitivity .....	28 dB (30 $\mu$ V)

## Cassette Deck Section

Tape Speed .....	4.76 cm/s
Wow and Flutter .....	0.06% (WRMS)
Fast Winding Time (C-60) .....	120 sec
Frequency Response (120 $\mu$ S) .....	20 Hz-20 kHz ( $\pm 3$ dB)
(70 $\mu$ S) .....	20 Hz-22.5 kHz ( $\pm 3$ dB)
Stereo Separation (1 kHz) .....	45 dB
Signal to Noise Ratio	
NR OFF .....	62 dB
Dolby B ON .....	71 dB
Dolby C ON .....	76 dB
dbx ON .....	86 dB

## Equalizer Section

Equalizer Action .....	$\pm 12$ dB at 60 Hz, 120 Hz, 250 Hz, 500 Hz, 1 kHz, 3.5 kHz, 10 kHz
Frequency Response .....	20 Hz ~ 60 kHz, $-3$ dB
Total Harmonic Distortion .....	0.01%

## Audio Section

Preamp Output .....	Normal: 300 mV/10 k ohms load High: 1.0 V/10 k ohms load
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## General

Operating Voltage (GND) .....	14.4 V (11-16 V allowable)
Current Consumption .....	0.8 A at Rated Power
Body size (W $\times$ H $\times$ D) .....	180 $\times$ 50 $\times$ 155 mm (7-1/16 $\times$ 1-15/16 $\times$ 6-1/8 in.)
Weight .....	2.2 kg (4.9 lb)